Amendments to the Specification

At page 17, at line 22, please add the following:

BRIEF DESCRIPTION OF THE DRAWING

The figure shows the process flow diagram of a preferred embodiment of the process according to the invention.

Please amend the paragraph at page 17, line 23 as follows:

~~The figure shows the process flow diagram of a preferred embodiment of the process according to the invention.~~ A feed stream 1 of liquefied petroleum gas (LPG) which consists substantially of propane, n-butane and isobutane and, in addition, may also comprise methane, ethane or pentanes, is fed to a rectification column 2 and separated into a stream 3 composed substantially of propane and any methane and ethane, and a stream 4 composed substantially of n-butane and isobutane and any pentanes. In the rectification column 5, any pentanes 6 are removed. The butane mixture 7 is separated in the rectification column 8 into isobutane 9 and n-butane 12, and isobutane is ~~isomerization~~ isomerized in the isomerization reactor 10 to an n-butane/isobutane mixture 11 which is fed back into the rectification column 8. n-Butane is fed as the feed gas stream 12 into the first dehydrogenation stage 15 in which a nonoxidative catalytic dehydrogenation of butane to 1-butene, 2-butene and butadiene takes place. This is preferably carried out under autothermal conditions while feeding in oxygen or air as cofeed 13 and optionally hydrogen as cofeed 14, Preference is given to carrying out the first dehydrogenation stage with backmixing in a fluidized bed or with partial gas recycling, for example as described in German patent application P 102 11 275.4, unpublished at the Priority date of the present invention. The product gas stream 16 leaving the first dehydrogenation stage which, in addition

to butadiene, 1-butene, 2-butene and unconverted n-butane, comprises steam and customary secondary components such as hydrogen, carbon oxides, nitrogen, hydrogen, methane, ethane, ethene, propane and propene is fed to a second dehydrogenation stage 18, in which while feeding in oxygen or air as cofeed 17, an oxydehydrogenation of 1-butene and 2-butene to butadiene takes place. The second dehydrogenation stage is preferably carried out in a tube bundle reactor. The second dehydrogenation stage may itself be carried out in more than one stage, for example in two stages. In the two-stage configuration of the oxydehydrogenation, the second dehydrogenation stage consists of a first oxydehydrogenation stage 18 and a second oxydehydrogenation stage 18a, into each of which air or oxygen is fed as cofecd 17 or 17a. The product gas stream 19a leaving the second dehydrogenation stage (in the one-stage configuration of the oxydehydrogenation, this is the product gas stream 19) comprises, in addition to butadiene and unconverted n-butane, steam and secondary components such as hydrogen, carbon oxides, nitrogen, methane, ethane, ethene, propane and/or propene, with or without small residues of 1-butene and 2-butene and with or without oxygen and oxygen-containing hydrocarbons (oxygenates). The product gas stream 19a, optionally after precooling in heat exchangers, is cooled in the cooling and condensation unit 20 which may be configured, for example, as a water fluidized bed or as a falling-film condenser, to such an extent that water and high-boiling organic by-products such as high-boiling hydrocarbons and oxygenates condense out and are discharged from the process as stream 21. The uncondensed product gas components are fed to the separating stage 23 as stream 22 in which a removal of low boilers and uncondensable secondary components 24 (when present in product gas stream 19a: hydrogen, carbon oxides, nitrogen, methane, ethane, ethene, propane, propene and oxygen) takes place. The separating stage 23 may be configured as a rectification column or as an absorption/desorption unit. The stream 25 comprising the C_4 products of the dehydrogenation, unconverted n-butane and any oxygenates such as furan and maleic anhydride is optionally fed to a further separating stage 26 which may be configured as a rectification column or an absorption/desorption unit. In the separating stage

26, oxygenates and any remaining water traces are removed and discharged from the process as stream 27. The stream 28 composed of butadiene and n-butane which may also comprise small proportions of 1 -butene and 2-butene is fed to a further separating stage 29, for example a butadiene scrubbing, and separated there into a stream 31 composed of n-butane and any 1-butene and 2-butene and a stream 30 composed of butadiene. The stream 31 may at least partially be recycled into the nonoxidative catalytic dehydrogenation stage 15.